What is claimed is:

1. A system using discrete photon counting to generate a graphical display indicative of densities in a target object, comprising:

a radiation source having a variable, controlled position relative to the target object to radiate photons toward the target object;

an array of photon detectors having a variable, controlled position relative to the target object to receive photons passing through the target object, wherein the array of photon detectors is surrounded by a radiation shield;

a motion controller coupled to the radiation source and the array of photon detectors for determining and controlling motion of one or more of the detector array and the radiation source, such that a constant distance is maintained therebetween;

a counter comprising an amplifier, a discriminator, and a pulse generator for each photon detector and means for discretely counting photons received by each photon detector; and

a display responsive to the counter for generating a graphic display of densities in the target object.

2. The system according to claim 1, further comprising an array of photon collimators, positioned in one-to one alignment with the array of photon detectors.

3. The system according to claim 1, further comprising a radiation filter positioned between the radiation source and the array of photon detectors for blocking unwanted radiation from impinging upon the array of photon detectors.

4. A system for minimizing scattered radiation from impinging on an array of photon detectors for generating a graphical display indicative of densities in a target object using discrete photon counting, comprising:

a radiation source having a variable, controlled position relative to the target object to radiate photons toward the target object, wherein the radiation source produces

a fan beam and further wherein the radiation source is movable so as to be adjusted to irradiated target objects of varying heights with the fan beam;

an array of photon detectors having a variable, controlled position relative to the target object to receive photons passing through the target object, wherein the array of photon detectors is surrounded by a radiation shield;

a radiation filter positioned between the target object and the array of photon detectors for blocking unwanted radiation from impinging upon the array of photon detectors;

an array of photon collimators, positioned in one-to-one alignment with the array of photon detectors to receive and collimate the photons from the radiation source; and

a laser pointer attached to the radiation source for indicating the location of the ground relative to the bottom of the array of photon detectors for aligning the radiation source, whenever it is repositioned, such that the fan beam irradiates the array of photon detectors and not the ground.

5. A system using discrete photon counting to generate a graphical display indicative of densities in a target object, comprising:

means for radiating photons toward the target object;

means for receiving photons passing through the target object, wherein the means for receiving photons is surrounded by a means for shielding the means for receiving photons from radiation;

means for determining and controlling motion of one or more of the means for receiving photons and the means for radiating photons, such that a constant distance is maintained therebetween;

a counter comprising an amplifier, a discriminator, and a pulse generator for each photon detector and means for discretely counting photons received by each photon detector; and

means for generating a graphic display of densities in the target object.

6. A linear detector array system for use in a target inspection system for detecting a contents of the target, the linear detector array comprising:

a plurality of vertical rows of staggered detectors, each of the plurality of vertical rows being vertically staggered from each other vertical row, such that a pitch between any two closest adjacent staggered detectors is smaller than a diameter of the staggered detectors.

7. The linear detector array system of Claim 6 further comprising:

a center vertical row of staggered detectors and one or more side vertical rows of staggered detectors:

a processor comprising an image-generating program, the processor receiving data from each of the one or more side vertical rows and from the center vertical row;

the image-generating program further including:

adjustment means for determining an adjustment for a horizontal displacement k of the one or more side vertical rows from the center vertical row, wherein the adjustment is used to correlate the data from the side vertical rows with data from the center vertical row so as to form undistorted images for multiple planes within the target.

8. The linear detector array system of Claim 7 wherein the adjustment means further includes:

computing means for determining an image adjustment distance 1 for multiple planes within the target according to a relationship 1=kZ/D, wherein Z is variable and is a distance between a radiation source and each of the multiple planes within the target, and wherein D is a distance between the radiation source and the linear detector array.

9. A method for processing staggered detection data for use in a target inspection system, the method comprising the steps of:

providing a plurality of vertical rows of staggered detectors, each of the plurality of vertical rows being vertically staggered from each other vertical row, such that a pitch between any two closest adjacent staggered detectors is smaller than a diameter of the staggered detectors including:

providing a center vertical row of staggered detectors;

providing one or more side vertical rows of staggered detectors;

providing a processor comprising an image-generating program;

receiving data at the processor from each of the one or more side vertical rows and from the center vertical row;

determining an adjustment for a horizontal displacement k of the one or more side vertical rows in order to correlate the data from the side vertical rows with data from the center vertical row so as to form undistorted images for multiple planes within the target.

10. The method of Claim 9 wherein the step of determining an adjustment for a horizontal displacement k further includes:

determining an image adjustment distance 1 for multiple planes within the target according to a relationship 1=kZ/D, wherein Z is variable and is a distance between a radiation source and each of the multiple planes within the target, and wherein D is a distance between the radiation source and the linear detector array.

11. The method of Claim 10, further comprising:

adjusting the data from the one or more side vertical rows and the center vertical row using the adjustment distance l for each of the multiple planes to form undistorted images for each of the multiple rows; and

comparing the undistorted images for each of the multiple planes to determine the location of an object within the target.